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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/271,447	03/18/1999	HIROAKI SATOH	400113/SAHIN	4160

23548 7590 12/20/2002
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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/20/2002

19

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/271,447

Applicant(s)

SATO, HIROAKI

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8, 10-14 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 10-14 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/2002 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-6 and 11-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are unclear because they contradict the parent claim. The parent claims require that layer (A) "consist essentially of" components (a) and (b). The phrase "consists essentially of" prohibits the addition of other components that materially affect the process. Claims 3-6 and 11-14 attempt to add further components (c) and (d) that materially affect the process, as disclosed at pp. 7-8.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 8, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri et al. (U.S. Patent 6,329,111, hereafter '111) in view of Taylor (U.S. Patent 5,371,148, hereafter '148).

'111 teaches a process for forming a pattern of fluorescent substance into the cell of a fluorescent substance display substrate comprising providing in the cell two separate layers

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which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 7, lines 1-10) composition layer (B, 8) (Fig. 4a-4b), exposing the layers to light, developing the layers, and baking the developed layers (col. 4, lines 18-39), wherein the resin composition (A) layer comprises an acrylic polymer (a, col. 10, lines 28-67) having a weight average molecular weight preferably in the range of 20,000-150,000 (col. 11, lines 26-36) and an acid number of 90-260 mgKOH/g (col. 11, lines 37-50) and a fluorescent substance (phosphor d, col. 16, lines 11-29) and the resin composition layer (7) is disposed between the inside of the cell (formed by substrate 1 and walls 2) and the photosensitive resin composition layer (8), as shown in Fig. 4B. The resin composition layer also includes (b) an ethylenically unsaturated monomer and (c) a photoinitiator in order to aid in the photopolymerization. Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer and (d) the phosphor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with or without the addition of ethylenically unsaturated monomers or photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the ethylenically unsaturated monomer and the photoinitiator from the photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

Claims 8 and 19: Layers (7 and 8) are formed and then pressed into the cells by laminating (Fig. 4b and col. 30, lines 24-29). Thus layer 7 must be formed in the cell first because it is on the bottom and layer 8 must be formed in the cell afterwards because it is on top.

Claim 17: The layers contact each other. See, e.g., Fig. 4B.

Claim 18: Layers (7 and 8) are formed and then pressed into the cells by laminating (Fig. 4b and col. 30, lines 24-29).

6. Claims 2-6, 10-14, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri '111 in view of Taylor '148, and further in view of Tanaka et al. (U.S. Patent 5,858,616).

Nojiri '111 and Taylor '148 are described above. '111 teaches that the viscosity of the photosensitive resin (A) should be $1-10^9$ Pa.s (col. 24, lines 27-34), but is silent as to the glass

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transition temperature. Thus, it does not teach a glass transition temperature of less than 30°C or not less than 30°C.

Claims 2-6, 10-14, 20-22: '616 teaches that the similar photosensitive phosphor-containing resins for application by laminating (see Fig. 3) It teaches identical viscosity ranges for the resin (col. 13, lines 31-40) to those of '111, and further teaches a preferred range of 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers or other components, such as plasticizers, with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer ('616, col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Claims 3, 5, 11, 13, and 20-22: '111 teaches that the resin may contain organic compounds, such as polyethylene glycol, for use as a plasticizer (col. 22, lines 49-64).

Claims 4, 6, 12, 14, and 20-22: '111 teaches that the resin may contain a polymerization inhibitor (col. 23, lines 11-16).

Claims 3, 6, 11, 14, and 20-22: '111 teaches that the resin may contain a compound with at least one ethylenically unsaturated group (col. 11, line 63-col. 14, line 11).

7. Claims 1-6, 8, 10-14, and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Taylor '148 and Koike et al. (U.S. Patent 5,922,395, hereafter '395).

Claims 1, 8, and 19: '616 teaches depositing a layer that is both an resin (A) composition layer (See col. 4, lines 36-45) and a photosensitive resin (B) composition layer (See col. 2, lines 26-62.) The resin composition includes (a) an acrylic resin is a copolymer with an acid value of 15-200 and a weight average molecular weight of 10,000-150,000 (col. 6, lines 46-59) and (b) a phosphor (i.e., a fluorescent material) (col. 2, lines 26-34). The composition is deposited in cells of a plasma display (col. 14, line 46-col. 15, line 7), exposed (col. 15, lines 8-50), developed (col. 15, lines 51-67), and baked (col. 16, lines 41-48; col. 17, lines 10-13).

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The resin composition layer also includes an ethylenically unsaturated monomer and a photoinitiator in order to aid in the photopolymerization (col. 2, lines 53-61). Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer and (d) the phosphor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with or without the addition of ethylenically unsaturated monomers or photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the ethylenically unsaturated monomer and the photoinitiator from the photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

'616 and '148 does not teach that the formation of separate layers, wherein a photosensitive layer (B) is formed after a resin composition layer (A) is formed.

Koike '935 teaches two equivalent embodiments of forming pigment layers for applications such as plasma display panels (col. 1, lines 7-9). In one (Figs. 1-2), a photosensitive pigment composition is deposited in the cells of the display panel, exposed and developed (col. 7, lines 8-29). In the other, a pigment composition layer (7) and a photoresist (i.e., a photosensitive resin) layer are applied. The photoresist layer is exposed, and both layers are developed (col. 8, line 42-col. 9, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a photoresist layer, such as that of Koike '395's second embodiment, on top of the phosphor layer of Tanaka '616 before developing and exposure with the expectation of similar results because Koike '395 teaches the equivalence of depositing a photosensitive pigment layer, and depositing a pigment layer followed by a photoresist layer before development in the formation of plasma display panels.

Claim 17: Such layers would contact one another.

The following comments refer to the teachings of '616:

Claims 2-5, 10-13, 20-22: The viscosity of the polymer composition is 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to have used polymers with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer (col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Claims 4, 6, 12, 14, 20-22: The composition may contain a polymerization inhibitor (col. 13, lines 20-26).

Claim 5, 13: The solvent may be a polyalkylene glycol (i.e., a polyhydric alcohol), such as those given in col. 12, lines 4-31).

Claim 6, 14: The resin composition may contain an ethylenically unsaturated group (col. 7, lines 39-44).

Claim 18: '616 teaches that photosensitive films may be placed in the cell by laminating (Fig. 3, col. 18, lines 9-24).

Response to Arguments

8. Applicant's arguments filed 11/13/2002 have been fully considered but they are not persuasive.

Applicant argues that the "consisting essentially of" limitation overcomes the prior art because the prior art includes photoinitiators. The argument is unconvincing in view of newly cited Taylor '148, which teaches that photoinitiators are not necessary for photopolymerization of acrylic polymers.

Applicant's arguments regarding the declaration are unconvincing because the declaration is not commensurate in scope with the claims. The claims are not limited to the particular materials, concentrations, glass transition temperatures, molecular weights, and acid numbers of the declared examples. Further, the declaration does not represent a comparison between the claimed subject matter and the prior art because none of the compositions of the declaration is covered by the claims. (Claims 1, 8, and 19 exclude the use of the ethylenically unsaturated compound glycerin triacrylate. Claims 20-22 require the use of a photoinhibitor, not present in the declaration.) Even if the declaration were demonstrated that the use of a photoinitiator caused pattern defects in the claimed subject matter, the argument would still be

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unconvincing because the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The lower material cost and greater flexibility (for situations in which no photoinitiator is available) afforded by not using the photoinitiator in combination with the expectation of success afforded by Taylor render the claimed subject matter obvious. The Examiner notes that another advantage of avoiding the use of photoinitiators (that of avoiding toxicity) would also have been recognized by one skilled in the art of photopolymerization. See Merrill (U.S. 5,459, 174, col. 18, lines 54-57).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Merrill et al. (U.S. Patent 5,459,174) demonstrates that the toxicity of photoinitiators is also of concern (col. 18, lines 54-57).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



MBC

December 13, 2002



SHRIVE P. BECK
SUPERVISOR OF PATENT EXAMINER
ART UNIT 1762